We claim:

1. A process for removing carbon monoxide from carbon-monoxide-comprising substance streams by adsorption to an adsorption composition, which comprises bringing the carbon-monoxide-comprising substance stream into contact with a copper-, zinc- and zirconium-comprising adsorption composition.

2. A process as claimed in claim 1, wherein an adsorption composition is used which comprises copper in an amount equivalent to from 30 to 99.8% by weight of CuO, zinc in an amount equivalent to from 0.1 to 69.9% by weight of ZnO and zirconium in an amount equivalent to from 0.1 to 69.9% by weight of ZrO_2, in each case based on the total amount of the adsorption composition.

3. A process as claimed in claim 2, wherein an adsorption composition is used which essentially consists of copper in an amount equivalent to from 30 to 99.8% by weight of CuO, zinc in an amount equivalent to from 0.1 to 69.9 % by weight of ZnO and zirconium in an amount equivalent to from 0.1 to 69.9% by weight of ZrO_2, in each case based on the total amount of the adsorption composition, the proportions of the individual components totaling 100% by weight.

4. A process as claimed in one of claims 1, 2 or 3, wherein an adsorption composition is used in which copper is present in part in metallic form and in part in the form of copper(I) oxide and/or copper(II) oxide, zinc is present in the form of zinc oxide and zirconium is present in the form of zirconium dioxide.

5. A process as claimed in claim 1, wherein carbon monoxide is removed from a liquid propylene stream.

6. A process as claimed in claim 1, wherein carbon monoxide is removed from a carbon-monoxide- and oxygen-comprising substance stream and part of the carbon monoxide is removed by catalytic reaction of the adsorption composition with oxygen.

7. A process as claimed in either of claims 1 and 6, wherein a copper(I)-oxide- and/or copper(II)-oxide-comprising adsorption composition is used and part of the carbon monoxide is removed by chemical reaction with said copper oxides

8. A process as claimed in one of claims 1, 6 or 7, wherein the adsorption composition is activated by treatment with a reducing agent.

9. A process as claimed in claim 8, wherein the adsorption composition is activated by being contacted with a hydrogen-comprising gas.

10. A process as claimed in one of claims 1, 6 or 7, wherein the adsorption composition is regenerated after reaching its adsorption capacity by heating it to a temperature in the range from 50 to 400°C and/or passing a gas through a bed of the adsorption composition to be regenerated.

11. An adsorption composition, copper(I) oxide and/or copper(II) oxide calculated as which essentially consists of from 30 to 99.8% by weight of copper oxide CuO, from 0.1 to 69.9% by weight of zinc and from 3 to 69.9% by weight of zirconium dioxide, in each case based on the total amount of the adsorption composition, the proportions of the individual components totaling 100% by weight.

Adsorption composition and process for removing carbon monoxide from substance streams

Abstract

Carbon monoxide is removed from substance streams by adsorption to an adsorption composition which comprises copper, zinc and zirconium.